

FRESHWATER DALYELLIID FLATWORM, *GIEYSZTORIA SUPERBA* SP. NOV.  
(DALYELLIIDAE: RHABDOCOELA) FROM SOUTHEAST QUEENSLAND,  
AUSTRALIA

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A new dalyelliid flatworm, *Gieysztoria superba* sp. nov. is described from a freshwater creek in southeast Queensland, Australia. With characters of the genus, it appears to be closely related to the cosmopolitan species *G. rubra*, but differs significantly in the number of spines (approx. 40) in the sclerotic armature of the male copulatory organ. □ *Freshwater, Dalyelliidae, taxonomy, Australia.*

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The Dalyelliidae contains many, mostly free-living, freshwater species of flatworms that are known from around the world (Luther, 1955), and in Australia ultrastructural studies have been conducted on an unidentified species of the cosmopolitan genus *Gieysztoria* by Rohde, Cannon & Watson (1988) and Watson & Rohde (1995). No taxonomic study of the family or its members, however, has been conducted here.

#### METHODS

Freshwater plants and sediments were collected from Gold Creek, Brookfield (27°27'58"S; 152°53'03"E), returned to the laboratory, and the worms extracted by careful examination using a stereo microscope. Worms were examined alive with bright field and Nomarski interference contrast microscopy. Whole mounts in Canada balsam were made after specimens were fixed in 5% buffered formalin and dehydrated through a graded alcohol series. Specimens were not stained. Sclerotic armature preparations were made by squash preparation and mounting in Epon or by immersing live worms in de Faure's fluid (Evans et al., 1961). Sections (2µm) were obtained serially from worms fixed in 4% glutaraldehyde in phosphate buffered saline and embedded in Epon. Sections were stained with toluidine blue.

Drawings of the anatomy were made using a camera lucida and digitised using Adobe *Illustrator*®. Measurements are in micrometres (µm) unless otherwise stated.

This material is lodged at the Queensland Museum (QM) as a wholemount (WM), serial sections (TS) and squash preparations (S).

DALYELLIIDAE Graff, 1908

*Gieysztoria superba* sp. nov.  
(Figs 1-2)

MATERIAL. HOLOTYPE: Gold Ck, Brookfield SEQ (27°27'58"S, 152°53'03"E). Feb. to Apr. 1998, V. Hartenstein, WM, QMG217989. PARATYPES: same data, TS (Epon: toluidine blue), QMG217990. OTHER MATERIAL: same data, Sclerotic armature preparation (squash preparation, Epon) QMG217991.

ETYMOLOGY. Named *superba* for the large number of spines in the male copulatory armature.

DESCRIPTION. HOLOTYPE: 550 long × 200 wide (Fig. 1), clear, filled with brown algal? bodies and posteriorly red pigment bands. Swims swiftly over substrate; frequently rotates around length axis while swimming. Anatomically (from live material and sections) consistent with the genus and having finger-like vitellaria. Arising from the distal portion of the muscular bulb surrounding the ejaculatory duct and prostate secretions there is a fenestrated girdle (20 wide) with irregular holes (Fig. 2). Suspended distally from the girdle are about 40 fine spines of about equal length, evenly arranged around the whole duct. Each spine is fluted with a fine tip and approx. 43 long.

DIAGNOSIS. With characters of the genus and a male copulatory organ with a moderately narrow, fenestrated girdle and about 40 spines of equal length.

HABITAT AND DISTRIBUTION. Found in the sediments and plants of freshwater creek at

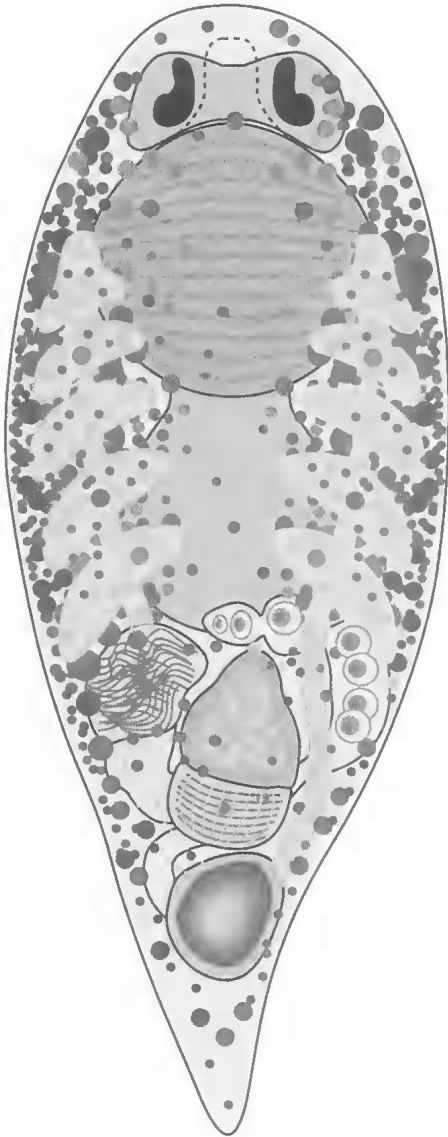


FIG. 1. *Gieysztoria superba* sp. nov. Habitus. Scale = 200 $\mu$ m.

Brookfield, SE Queensland. Numbers appear to decline in the colder months (May-September).

REMARKS. Luther (1955) divided the 46 species of *Gieysztoria* then described into two groups: 'aequales' with a sclerotic armature displaying a wreath of homogeneous spines (about 25 species) and 'inaequales' for the rest. *G. superba* belongs to the first group: it has a sclerotic armature with a girdle and possesses papillose vitellaria. In the numerous spines *G. superba* resembles *G. knipovici* Beklemischev

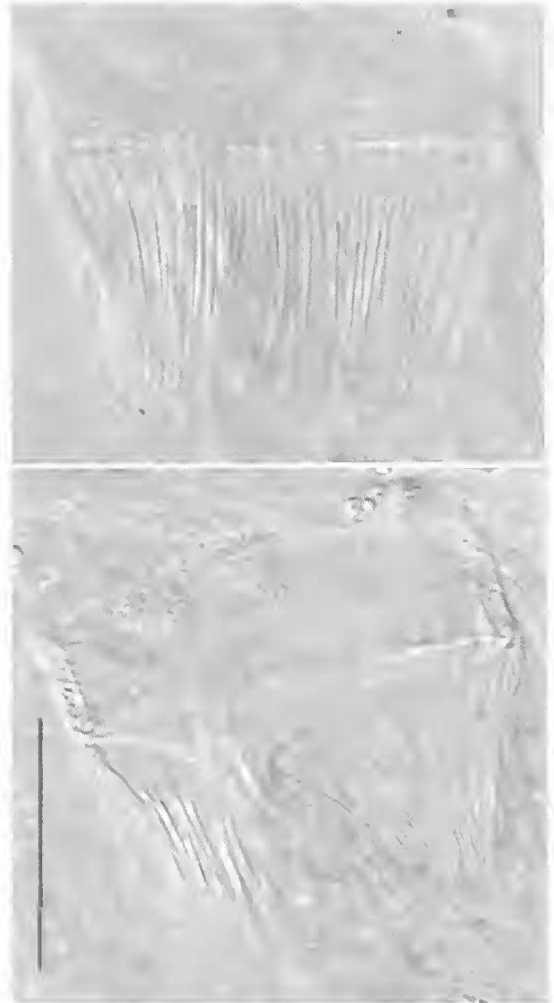


FIG. 2. *Gieysztoria superba* sp. nov.: two focal planes of the sclerotic armature in a squash preparation (QM G217991). Scale = 50 $\mu$ m.

1953 which has at least 30 spines in its armature, but *G. superba* differs in having vitellaria with long, digitate extensions (not short papillae). *G. superba* has similar vitellaria to *G. bellis* Marcus 1946 and *G. rubra* Fuhrmann 1894. *G. superba* can be distinguished because its spines lack the cone-shaped tip found in *G. bellis*, and although the armature of *G. superba* looks very similar to that of *G. rubra*, it has a wider girdle and shorter spines. Most characteristic of *G. superba* is the number of spines in its armature. While *G. bellis* and *G. rubra* have approx. 19 spines, *G. superba* has approx. 40.

DISCUSSION. The inter-specific variation in spine number between *G. superba* and *G. rubra* is

far greater than the intra-specific variation within *G. rubra* that is associated with geographic location. (Marcus, 1946; Luther, 1955; Young, 1977). We, therefore, have no hesitation in considering this a new species, the first taxonomic account of any member of the Dalyelliidae from Australia.

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